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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
087902,809	07/30/97	SCHUEGRAF	K 303.278051

MM21/0605  
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EXAMINER  
NADAV, U

ART UNIT	PAPER NUMBER
2811	

DATE MAILED: 06/05/98

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.

08/902,809

Applicant(s)

Schuegraf et al

Examiner

ORI NADAV

Group Art Unit

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☒ Responsive to communication(s) filed on Jul 30, 1997

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claim

☒ Claim(s) 1-22 is/are pending in the application

Of the above, claim(s) 1-12 is/are withdrawn from consideration

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 13-22 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on Jul 30, 1997 is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☒ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☒ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

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Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 13-22 drawn to a semiconductor device , classified in class 257, subclass 408.
- II. Claims 1-12 drawn to a process of making a semiconductor device, classified in class 438, subclass 22+.

1. The inventions are distinct, each from the other because of the following reasons:  
Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case unpatentability of Group II invention would not necessarily imply unpatentability of the process of the group II invention, since the device of group I invention could be made by processes different from those of group II invention. For example, using a conventional additional etch step to remove excess spacer material.

2. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Applicant is advised that the response to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

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3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(h).

4. During a telephone conversation with Mr. Kluth on 5-22-98 a provisional election was made without traverse to prosecute the invention of Group I, claims 13-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-12 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

#### **DETAILED ACTION**

##### ***Drawings***

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "220" has been used to designate both a layer and a spacer. Correction is required.

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6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: #211 and #221 in figure 2D, and #220 in figure 2C. Correction is required.

7. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect can be deferred until the application is allowed by the examiner.

### *Specification*

8. The disclosure is objected to because of the following informalities: The word "smile" in page 5, line 5, has no meaning.

Appropriate correction is required.

9. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

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Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

Extensive mechanical and design details of apparatus should not be given.

*Claim Rejections - 35 USC § 112*

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 13-22 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not describe a layer of silicon oxide deposited on the semiconductor device, thus its function and usefulness are not clear.

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With regard to claims 13-16, the location of the active areas with respect to the polysilicon layer is not clear, and the specification does not identify what the active areas are. The location of the polysilicon layer is not described in the specification, and is not shown in figures 2A-2D.

With regard to claim 20-21, the location of the active area and the electrode with respect to the semiconductor device is not clear. Also, the location of the spacer with respect to the active area is not described.

With regard to claim 22, the location of the spacer with respect to a first layer of the semiconductor device and to a first and second areas of the semiconductor device is not clear. Also the location of the first layer of the semiconductor device with respect to a first and second areas of the semiconductor device is not described.

13. Claims 13-22 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2173.05(I). The omitted structural cooperative relationships are: the polysilicon layer, the active areas, the first and second areas, and the selective spacer.

14. Claims 13-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The term "selective spacer" in claims 14 is a relative term which renders the claim indefinite. The term "selective spacer" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 20-22, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Gonzalez.

Gonzalez teaches a semiconductor device (figure 2) having an electrode (figure 2, under #30) and an active area (#29), wherein the electrode has a side and the active area has a surface, comprising; a spacer made of silicon nitride (column 5, lines 8-9, #30) wherein the spacer covers the electrode (figure 2, under #30), and provides unobstructed physical communication with the active area (figure 4, #29a).



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With regard to claim 21, Gonzalez also teaches a semiconductor device (figure 2) having an electrode (figure 4, above #12) and an active area (#29a), wherein the electrode has a side and the active area has a surface, comprising; a spacer (#40) wherein the spacer covers the side of the electrode, and provides unobstructed physical communication with the active area.

With regard to claim 22, Gonzalez teaches a spacer for a semiconductor device (figure 2, #30), wherein; the spacer is disposed to substantially prevent physical communication between the first layer of the semiconductor device (#12) and a first area of the semiconductor device (#32); The spacer is disposed to provide unobstructed physical communication between the first layer of the semiconductor device (#12) and a second area of the semiconductor device (#29a).

***Claim Rejections - 35 USC § 103***

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gonzalez in view of Watabe et al.

Gonzalez teaches a semiconductor device comprising: a layer of crystal silicon (column 4, line 49, #12), one or more active areas (figure 4, #29a), and one or more features protruding from the

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crystal silicon layer and having sidewalls (figure 4), the one or more features separating the active areas, each of the one or more features including; A portion of a polysilicon layer (column 4, line 63, #20), one or more layers of conductive materials deposited on the polysilicon layer comprise silicon nitride (column 4, line 63, #22), and a spacer selectively deposited on the sidewalls of the one or more features (figure 4) comprises silicon nitride (column 5, line 9).

Gonzalez does not teach a layer of silicon oxide deposited on the semiconductor device wherein the silicon nitride spacer is interposed between the layer of the silicon oxide and the sidewalls of the one or more features.

Watabe et al teach a layer of silicon oxide (column 15, line 29, #38) is deposited on a semiconductor device (figure 14F, #38), wherein a spacer (#35) is interposed between the layer of the silicon oxide and the gate.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to deposit a layer of a silicon oxide on Gonzalez device in order to protect the device by a method well known in the art.

With regard to claim 17-19, Gonzalez teaches one or more layers of conductive materials comprise silicon nitride (column 4, line 63, #22), having sidewalls exposing the one or more layers, and a spacer selectively deposited on the sidewalls of the one or more features (figure 4) comprises silicon nitride (column 5, line 9).

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18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B, C, D, E, F, G and H are cited as being related to fabricating semiconductor devices.

19. Any inquiry concerning this communication should be directed to Examiner Nadav at telephone number (703) 308-8138.

*Tom Thomas*

TOM THOMAS  
SUPERVISORY PATENT EXAMINER